Cambridge OCR-set Assignment

Sample Assessment Material

Cambridge OCR Level 3 Alternative Academic Qualification
Cambridge Advanced National in Cyber Security and Networks

Unit F199: Designing and communicating secure global computing systems

Scenario Title: Camfam International

Valid for assessment from September 20XX to 20XX.
For use by students beginning the qualification in September 20XX.

This is a sample Cambridge OCR-set assignment which should only be used for practice**.**

This assignment **must not** be used for live assessment of students.

The live assignments will be available on our secure website, 'Teach Cambridge'.

The Cambridge OCR administrative codes linked to this unit are:

- unit entry code F199
- certification code H137

The regulated qualification number linked to this unit is:

610/6208/X

Duration

About 15 hours of supervised time (GLH)
(work that **must** be completed under teacher supervised conditions)

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Information and instructions for teachers

Using this assignment

This assignment provides a scenario and set of related tasks that reflect how secure global computing systems are scoped, designed and modelled.

You can give this to students on or after 1 June 202X to help them understand it before they start using it for assessment. The dates for which students can use it for assessment are shown on the front cover.

The assignment:
- Is written so that students have the opportunity to meet the requirements of all assessment criteria for the unit.
- Will tell students if their evidence must be in a specific format. If the task does not specify a format, students can choose the format to use.
- **Must** be completed under teacher supervision.

We have estimated that this assignment will take about 15 hours of supervised time to complete. Students should need approximately:
- 4 hours to complete Task 1.
- 4 hours to complete Task 2.
- 4 hours to complete Task 3.
- 3 hours to complete Task 4.

You **must**:
- Use a Cambridge OCR-set assignment for summative assessment of students.
- Familiarise yourself with the assessment criteria and assessment guidance for the tasks. These are given at the end of each student task. They are also with the unit content in **Section 5** of the Specification.
  Assessment guidance is only given where additional information is needed. There might not be assessment guidance for each criterion.
- Make sure students understand that the assessment criteria and assessment guidance tell them in detail what to do in each task.
- Read and understand **all** the rules and guidance in **Section 7** of the Specification **before** your students start the set assignments.
- Make sure that your students complete the tasks and that you assess the tasks fully in line with the rules and guidance in **Section 7** of the Specification.
- Give your students the **Cyber Security and Networks Student guide to NEA assignments before** they start the assignments.

You **must not**:
- Use live Cambridge OCR-set assignments for practice or formative

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assessment. This sample assessment material **can** be used for practice or formative assessment.

- Use this sample assessment material for live assessment of students.
- Allow group work for **any** task in this assignment.
- Change any part of the Cambridge OCR-set assignments or assessment criteria.

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Information for delivering tasks

Task	Requirements
Task 3	Students **must** have access to software which allows a network simulation for phase 1 of the upgraded secure global system (Wide Area Network-WAN) to be created and its operations simulated and tested.

Pages 1-4 are for teachers only. Please do **not** give **Pages 1-4** to your students.

You can give **any** or **all** of the pages **that follow** to your students.

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Tasks for students and assessment criteria

Unit F199: Designing and communicating secure global computing systems

Scenario title: Camfam International

Valid for assessment from September 20XX to 20XX.
For use by students beginning the qualification in September 20XX.

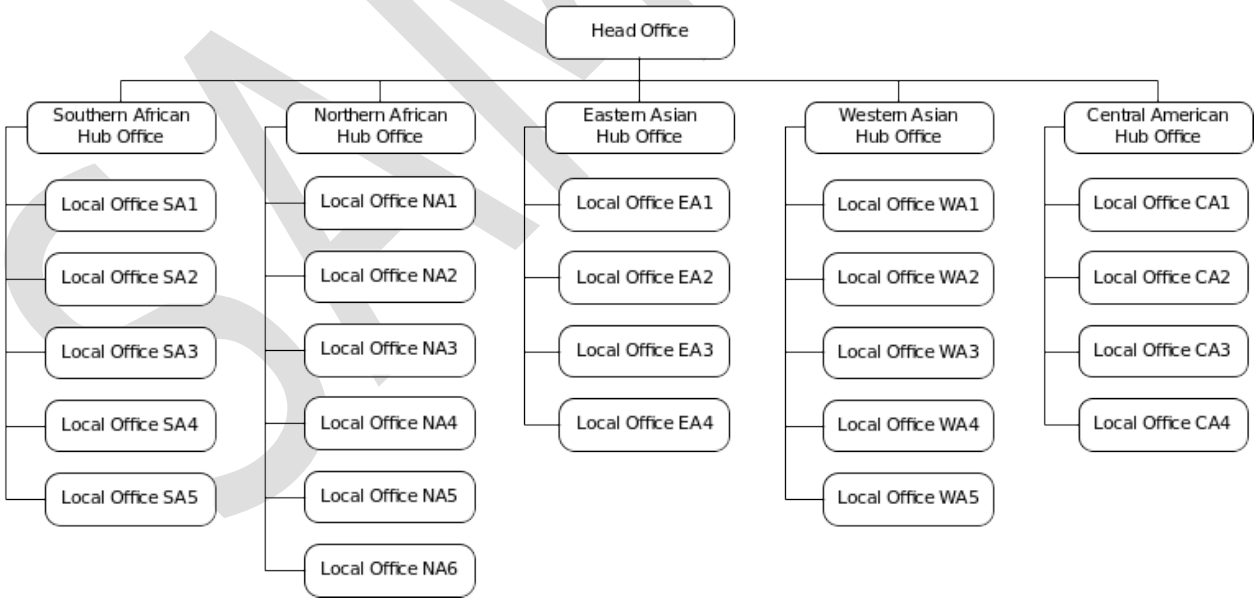
Scenario

Camfam International is a large Aid Charity. It operates in over 50 countries globally with around 30,000 staff.

Camfam International's Head Office is based in Newcastle upon Tyne, England. There are also 5 Hub Offices around the World, each coordinating the work of many Local Offices. There are 24 Local Offices in total.

Camfam International has raised over £500 million in donations and grants over the past two years. Most of this money comes from donations from over 1 million individuals.

The organisational structure of Camfam International's offices around the World is shown below:



Camfam International's requirements for the secure global computing system

Camfam International need a global computing system that will allow them to keep all of their financial information secure and to respond quickly and effectively to the needs of people affected by natural disasters around the World (e.g. flood, drought, earthquakes).

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Camfam International control all financial and donors' information centrally from their Head Office in Newcastle upon Tyne, England. There is a team of 100 finance staff in the Head Office, supported by up to ten finance staff in each Hub Office and up to three finance staff in each Local Office. The financial information and the donors' information must remain separate and secure within Camfam International 's new global computing system.

Each Hub Office must be able to provide global computing system services to all of its Local Offices. Each Hub Office with all of its Local Offices have a combined staff of approximately 6000 staff members.

Each Local Office needs to provide connectivity and IT related services to approximately 1000 staff members through their new computing system while they are in the office. Also, Camfam International will need remote access to their new computing system for some of their staff who may be either working from home or out in the field. However, following natural disasters each Local Office must be able to service up to 10,000 reliable remote connections, as many additional Camfam International aid workers from other countries could need to work in the area.

Camfam International are committed to accessibility for all staff, including giving access to new information and communications technologies and systems. Staff working in all Camfam International offices also need access to the standard office applications, including word processing, spreadsheets, and email. Staff working remotely must have access to email.

The proposed computing system should be able to cope with the closure of a Local Office due to natural disaster.

The new global computing system will be maintained and managed by the Camfam International IT Support Department, which comprises 200 staff. The IT Support is managed from the Eastern Asian Hub Office.

Your job role and assignment

There will be three phases of major upgrade to Camfam International's computer networks. You are a consultant who has been contracted by Camfam International to create a design proposal for **Phase 1** of the upgrade.

Outline of the three phases:

- Phase 1 (Duration 6 months) – Produce a design proposal for a global computing system covering a small number of offices and a total of 100 staff.
- Phase 2 (Completion 12 months from end of Phase 1) – Implement the proposed global computing system from Phase 1.
- Phase 3 (Expected to be completed within 18 months of successful completion of Phase 2) – Roll out the global computing system to all offices and all staff members globally.

Here are the details of the offices to be included in Phase 1:

- Head Office in Newcastle upon Tyne (30 users)
- Eastern Asian Hub Office (20 users)
- Local Office EA1 (15 users)
- Local Office EA2 (15 users)

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- Local Office SA1 (10 users)
- Local Office NA1 (10 users)

Phase 1 should include a number of sub phases:

- Design secure financial connections between Head Office, Eastern Asian Hub Office and Local Offices included in Phase 1.
- Design remote access to Local Offices.
- Design method to mitigate closure of one of the Local Offices due to natural disaster.
- Test security measures.

Task 1

Scoping the secure global computing system

Topic Areas 1 and 2 are assessed in this task.

The task is:
Create an outline scope for **Phase 1** of Camfam International's upgraded secure global computing system.

- You will describe the requirements for **Phase 1** of the upgraded secure global computing system.

Your evidence **must** include:

- Written evidence.
- An outline scope document.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P1: Describe the client and user requirements of the secure global computing system. (PO2)	**M1: Create** an outline scope document for the secure global computing solution. (PO4)	**D1**: **Discuss** the advantages and disadvantages to the client of implementing the outline scope document. (PO3)
P2: Identify the success criteria and the goals of the secure global computing system. (PO2)		
P3: Describe the technical requirements of the secure global computing system. (PO2)	**M2: Explain** how the secure global computing system will support different user requirements. (PO2)	

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Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P1	• Students **must** describe **both** the client requirements **and** the user requirements of the secure global computing system.
P2	• Students **must** identify **both** the success criteria **and** the goals of the secure global computing system.
P3	• Students **must** describe **at least five** technical requirements relevant to the secure global computing system. • Where students make assumptions about technical requirements, such assumptions must be clearly stated.
M1	• Students **must** create an outline scope document for the secure global computing solution. • The outline scope document **must** include all components relevant to the secure global computing system from the scenario. • The outline scope **could** be created in any suitable format and must follow conventions to scope a secure global computing system.
M2	• Students' explanations **must** include **at least three** different user requirements. • They must explain **at least one** way in which the secure global computing system could support **each** of the different user requirements.
D1	• Students **must** discuss **both** the advantages **and** disadvantages **to the client** of implementing the outline scope document. • This could include qualitative judgements about the impact **on the client** of implementing the scope document.

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Task 2
Creating design documentation for the secure global computing system

Topic Areas 1 and 3 are assessed in this task

The task is:
Design the upgraded secure global computing system for **Phase 1**.

You will

- Use design documentation to specify the upgraded secure global computing system.
- Describe how the secure global computing system will be tested.

Your evidence **must** include:

- Design documentation.
- Written evidence.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P4: Create a diagram which shows the logical design for the secure global computing system. (PO4)	**M3: Explain** the proposed choices of technology included in the design documentation for the secure global computing system. (PO2)	**D2**: **Discuss** the effectiveness of the security features included in the security schema for the secure global computing system. (PO3)
P5: Create a diagram which shows the physical design for the secure global computing system. (PO4)		
P6: Create a security schema for the secure global computing system. (PO4)		
P7: Describe how the secure global computing system will be tested. (PO2)		

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Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P4	• For P4, students **must** create a diagram which shows the logical design of the secure global computing system. • For P5, students **must** create a diagram which shows the physical design of the secure global computing system. • All network diagrams must follow common conventions, layout and formats. Topic Area 2.2 contains design documentation which students **must** consider.
P5	
P6	• Students **must** create a security schema for the secure global computing system. • The security schema **must** include **all relevant** security technology that could enable the secure global computing system **to be secured**, e.g. authentication, access control, access rights, device hardening.
P7	• Students **must** describe how they intend to test the secure global computing including the elements they intend to test. The description of how the secure global computing system will be tested **could** include the content in Topic Area 4.2.
M3	• Students **must** explain the reasons for their choices of technology included in the design documentation for the secure global computing system. • Students **must** provide an explanation that covers **all** choices made about the technology which enables the secure global computing system, e.g. hardware, software, infrastructure, security and support services.
D2	• Students **must** discuss the effectiveness of **all** security features included in the security schema for the secure global computing system. • Students **could** consider the characteristics, advantages and disadvantages of the security features included in their security schema. • The analysis produced by students **must** relate to the context given in the scenario.

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Task 3
Simulating and testing the secure global computing system

Topic Area 4 is assessed in this task

The task is:

Create a simulation of the secure global computing system you designed in **Task 2**.

- You will use software to create a network simulation for Phase 1 of the upgraded secure global computing system.
- You will need to test that the simulation functions as intended.

Your evidence **must** include:

- Video/screen recordings demonstrating the simulation.
- Documented test results.
- Written evidence.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P8: Create a simulation of the topology for the secure global computing system. (PO4)	**M4: Use** software tools to simulate a secure global computing system which fully meets the client and user requirements. (PO4)	**D3: Evaluate** the process used to simulate and test the secure global computing system. (PO3)
P9: Configure the simulation of the secure global computing system. (PO4)		
P10: Complete testing of the secure global computing system and document test results in an appropriate format. (PO4)	**M5: Analyse** the test results documenting any required remedial action. (PO3)	

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Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P8	• Students **must** use software to create a network simulation of the topology of the secure global computing system designed in Task 2.
P9	• Students **must** provide clear evidence that the simulation of the secure global computing system **has been** configured.
P10	• Students **must** provide clear evidence that they have completed testing of the secure global computing system. • Students **could** document their testing in the template for test table provided. If it is not clear from the test table what the testing outcomes are, another evidence format **must** be used (e.g. screen recording or video) and referenced in the test table.
M4	• Students **must** provide clear evidence that they have used software tools to simulate a secure global computing system that fully meets the client and user requirements. • The secure global computing system will fully meet the client and user requirements when all related success criteria and goals have been shown to be met.
M5	• Students **must** provide clear evidence that they have analysed all test results. • Students **must** also document any required remedial action identified during the analysis. • We do **not** expect faults to be artificially introduced to the simulation of the secure global computing system, but when issues occur, required remedial action identified **must** be documented.
D3	• Students **must** evaluate the processes they followed to simulate and test the secure global computing system. Students **could** evaluate the individual tools and techniques the have used during the process.

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Task 4
Showcasing and reviewing the secure global computing system

Topic Areas 3 and 5 are assessed in this task

The task is:

Create a solution showcase that could be delivered to the Director of the Camfam International's IT Support Department.

- The showcase needs to communicate the secure global computing system simulated in **Task 3**.

Review the suitability of the secure global computing system simulated in **Task 3**.

Your evidence **must** include:

- A solution showcase.
- Written evidence.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P11: Create a showcase which communicates the secure global computing system. (PO4)	**M6: Explain** how the design of the showcase is appropriate for the audience. (PO2)	
P12: Analyse the strengths and weaknesses of the secure global computing system. (PO3)	**M7: Assess** the suitability of the secure global computing system for meeting the client and user requirements. (PO3)	**D4: Discuss** improvements and further development opportunities for the secure global computing system. (PO3)
		D5: Assess the technical feasibility of the secure global computing system. (PO3)

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Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P11	• Students **must** create a showcase which communicates the secure global computing system. • The showcase **must** include content that is appropriate for the audience detailed in the scenario. • The showcase **could** be created in any suitable format.
P12	• Students **must** analyse the strengths and weaknesses of the secure global computing system in relation to the requirements identified in Task 1.
M6	• Students **must** explain how the design of the showcase is appropriate for the audience. • When explaining the appropriateness of the design of the showcase, students must make clear reference to the audience and context from the scenario.
M7	• Students **must** provide clear evidence that they have assessed the suitability of the secure global computing system for meeting the client and user requirements. • When assessing the suitability of the secure global computing system, students **could** also consider the success criteria and goals included in the outline scope document, where these were derived from the client and user requirements.
D4	• Students **must** discuss **at least three** improvements that could be made to the secure global computing system. Students **must** present, analyse and evaluate relevant points to make a reasoned judgement about the improvements, related to the context of the scenario. • Students **must** also discuss **at least two** further development opportunities for the secure global computing system. Students **must** present, analyse and evaluate relevant points to make a reasoned judgement about the further development opportunities, related to the context of the scenario.
D5	• Students **must** assess the technical feasibility of the secure global computing system. • Students **must** decide whether the secure global computing system is technically feasible. This reasoned judgement must be informed by relevant information.

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Template for test table

Test ID	Test type	Test description	Test data	Expected result	Actual result	Remedial action required	Retest result

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NEA Command Words

The table below shows the command words that may be used in the NEA assignments and/or assessment criteria.

Command Word	Meaning
Adapt	• Change to make suitable for a new use or purpose
Analyse	• Separate or break down information into parts and identify their characteristics or elements • Explain the different elements of a topic or argument and make reasoned comments • Explain the impacts of actions using a logical chain of reasoning
Assess	• Offer a reasoned judgement of the standard or quality of situations or skills. The reasoned judgement is informed by relevant facts
Calculate	• Work out the numerical value. Show your working unless otherwise stated
Classify	• Arrange in categories according to shared qualities or characteristics
Compare	• Give an account of the similarities and differences between two or more items, situations or actions
Conclude	• Judge or decide something
Describe	• Give an account that includes the relevant characteristics, qualities or events
Discuss (how/whether/etc)	• Present, analyse and evaluate relevant points (for example, for/against an argument) to make a reasoned judgement
Evaluate	• Make a reasoned qualitative judgement considering different factors and using available knowledge/experience
Examine	• To look at, inspect, or scrutinise carefully, or in detail
Explain	• Give reasons for and/or causes of something • Make something clear by describing and/or giving information
Interpret	• Translate information into recognisable form • Convey one's understanding to others, e.g. in a performance
Investigate	• Inquire into (a situation or problem)
Justify	• Give valid reasons for offering an opinion or reaching a conclusion
Research	• Do detailed study in order to discover (new) information or reach a (new) understanding
Summarise	• Express the most important facts or ideas about something in a short and clear form

We might also use other command words but these will be:

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- commonly used words whose meaning will be made clear from the context in which they are used.
- subject specific words drawn from the unit content.

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